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TECHNICAL REPORT 4070

AN IMPROVED COMPUTER PROGRAM
TO CALCULATE THE
AVERAGE BLAST IMPULSE LOADS
ACTING ON A WALL OF A CUBICLE

STUART LEVY

MAY 1970

PICATINNY ARSENAL DOVER, NEW JERSEY

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AMMUNITION ENGINEERING DIRECTORATE
PICATINNY ARSENAL
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## ACKNOWLEDGMENT

This report and computer program were prepared with the advice of Richard Rindner of the Process Engineering Laboratory, Picatinny Arsenal and Norval Dobbs of Ammann and Whitney, Consulting Engineers, New York, who originally developed the program under a project funded by the Armed Forces Explosive Safety Board.

FIGURE 1

CUBICLE PARAMETERS

#### SUMMARY

An improved computer program was devised to calculate the average blast impulse loads acting on a wall of a cubicle when an explosive charge is detonated within the cubicle. It was formulated by the AED's Process Engineering Laboratory in connection with the Safety Design Criteria Program.

#### PROGRAM DESCRIPTION

The original computer program was to calculate data points for the construction of impulse charts in regulatory Department of Defense publication Technical Manual 5-1300, "Structures to Prevent the Effects of Accidental Explosion." This original program was prepared by Ammann & Whitney, a consulting engineering firm in New York City, dated June 1969, under contract to Picatinny Arsenal.

The input to the program was simplified. Instead of a possible five data cards\_per\_problem only two data cards were required. Two subroutines were added to calculate geometrical ratios and to specify the grid system needed in the problem solution. The output was modified to echo the input and give a clear print-out of the reflected impulse on each wall and the total impulse acting on the wall in question. This program is suitable for use by an engineer with little or no computer background.

The program can be used as a supplement to TM 75-1300. It eliminates the necessity of interpolation or extrapolation from the impulse charts in the magual and can save many hours of tedious hand calculations by completing multiple impulse calculations in a few minutes.

Step-by-step procedures are given for specifying the computer input. Sample input sheets, problem solutions by computer and impulse charts of TM 5-1300 arc in Appendix A.

The program prints the solution of each problem on a separate page. The output consists of the title, input data, and the calculated impulse for each reflecting surface and total impulse load.

The computer program is written in Fortran IV and has been run on an IBM 360, Model 65. A copy of the Fortran coding and required input data is in Appendix B.

#### Limitation

Because of the limitations of the test data used to develop this computer program, extrapolation beyond this range may give inaccurate results. However, to overcome this, the restrictions of the geometrical ratios mentioned on Pages 4-12 of TM 5-1300 are incorporated in the computed program.

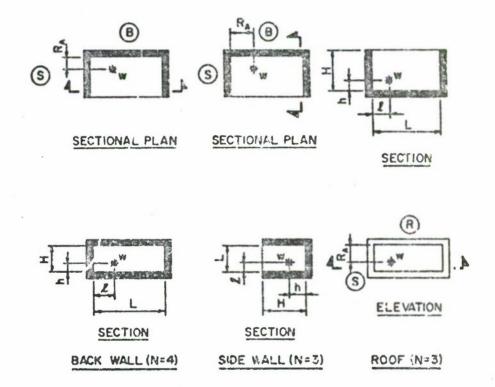
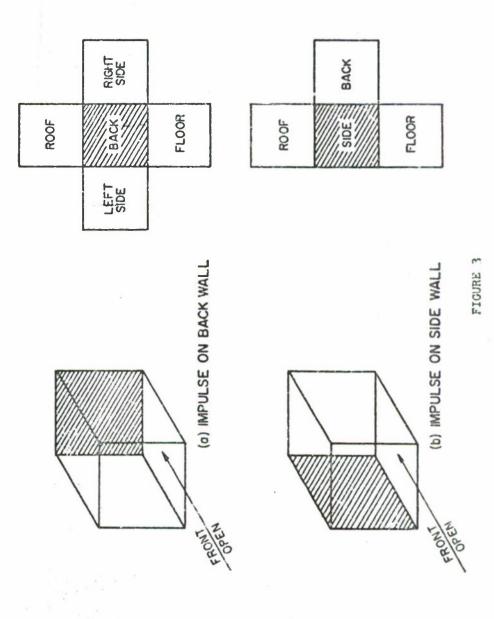


FIGURE 2
THREE WALL CUBICLE WITH ROOF



HEFLECTING SUMPACES - 3 WALL CUBICLE WITH ROOF

3

TABLE 1
INPUT DEFINITIONS AND FIELD SPECIFICATIONS

			7
	Column	Symbol	Description
Card No. 1	1-68		Problem title
Card No. 2	1-10	RA	Distance from center of charge to wall in questica (ft.) (Decimal point required.)
Card No. 2	11-20	W	Explosive charge weight (lbs.) (Decimal point required.)
Card No. 2	21-30	н	Height of the wall in question (ft.) (Decimal point required.)
Card No. 2	31-1,0	L/	Length of loaded vall (ft.) (Decimal point required.)
Card No. 2	41-50	/h	Height of charge above floor (ft.) (Decimal point required.)
Card No. 2	51-60/	ı	Minimum distance between the charge to and an adjacent wall (ft.) (Decimal point required.)
Card No. 2	61-70		Leave blank
Card No. 2	71 72 73 74		FLOOR - Insert 1 if present ROOF - Insert 1 if present LEFT SIDE - Insert 1 if present RIGHT SIDE- Insert 1 if present

# STEP-BY-STEP PROCEDURE FOR PROGRAM INPUT

To utilize the program, it is necessary to fill out the information required by the two data cards on the input form (Figure 4). The data should be key-punched and inserted in its proper place in the input deck. It should be noted that the required input data in Appendix B must precede this data.

The input parameters are given by the input sheet (Figure 4) and are defined in meaning and card column position in Table 1 and illustrated in Figures 1-3.

TABLE 2

COMPARISON OF COMPUTER RESULTS WITH MANUAL CALCULATIONS

Impulse - PSI - MS

Problem	Manual	Computer	Difference	% Difference
A5	1000	958	42	4.2
<b>A</b> 6	8500	8651	151	1.78
_A8	117	112	5	4.24

As indicated in Table 2, the difference between the manual and computer calculations is only a few percent. This difference may be accounted for by the smoothing of the impulse curves contained in the manual. The computers results should be more accurate than the manual charts since the calculation are direct and numerical interpolation is used instead of visual.

Appendix A shows the details of the manual and computer calculations.

6

CARD NO. 1

PROBLEM IDENTIFICATION (TITLE CARD)

99

CARD NO. 2

			1	
70 71 72 73 74	REFLECTION CODE	R H O H	EH	
73	MI S I I I I I I I I I I I I I I I I I I			
72	CL	R L L		
Н	T.	# 400	~	-
7	RI	4,400		
70				
		$\rightarrow$		
61				
51 50 61		MIN. DIST. OF CHARGE TO ADJ. WALL	LFt.	
1,1 50 51		HEIGHT OF CHARGE ABOVE FLOOR	h Ft.	
21 30 31 40 41		WALL	L Ft.	
0		H		
[		WALL	E E	
2		3日		
20		E E		
10 11		CHARGE	W Lbs.	
1 10		DIST. OF CHARGE FROM WALL	RA Ft.	

FIGURE 4

INPUT SHEET

#### Filling Out the Input Form

These procedures should be followed in filling out the input form.

- 1. Fill in Title or Problem Identification Card.
- Sketch the structure and charge location as shown in Figure 1 and 2.
- 3. Enter RA, W, H, L. h, 1. (Units are in feet and ibs; a decimal point must be supplied after each number.)
- 4. Enter a "1" or "zero" (no decimal point) in the appropriate column of the reflection code of the input sheet. If the reflection surface (floor, roof, left side wall or right side wall) is present enter a l, otherwise indicate the absence of the surface by a zero. Sketching the cubicle and unfolding the view (Figure 3) will help determine the reflecting surface. Detailed instructions follow.

### Specifying Reflection Code

In performing its calculations, the program considers the effect of reflection of the original blast impulse from surfaces at right angles and in contact with the wall whose impulse load is being computed. Figure 3 illustrates a method for determining the reflecting surfaces of a three-wall cubicle with roof. Figure 3(a) shows how to specify the reflection code on the input sheet (Figure 4) when it is desired to calculate the impulse load on the back wall. By unfolding the walls of the cubicle, keeping the back wall in the center, it is noted that there are four reflecting surfaces at right angles and in contact with the back wall: the floor, roof and two side walls. There the presence of these reflecting surfaces are indicated on the input sheet by putting a 1 in each of the columns labeled Floor, Roof, Left Side, Right Side. The reflection code of Figure 4 would be 1111. Sample Problem A6 (Appendix A) has the same configuration of Figure 4 except that it lacks a roof; its reflection code is 1011.

Sometimes the wall in question is not the back wall. In order to use the input form, the cubicle should be rotated so that the wall occupies the same position as the back wall. The solution will be the same as a back wall problem.

In Sample Problem A8, (Appendix A) it is required to calculate the impulse load on the roof of a cubicle. The cubicle is rotated 90° so that the roof becomes the back wall, the floor the front wall, and the front wall the roof. This configuration will then be the same as Figure 3(a). The input sheet should then be filled out accordingly.

Figure 3(b) shows an unfolded view of the same cubicle used as an aid in calculating the impulse on a side wall. The three reflecting surfaces are the roof, back wall and floor. In specifying the input code, the cubicle is rotated 90° so that the side wall is treated as a back wall and vice versa. The reflection code of Figure 4 (input sheet) would be 1110. Sample Problem A5 (Appendix A) shows the calculation of the impulse loading on a side wall of a cubicle similar to Figure 4 except that Sample Problem A5 lacks a roof; its reflection code is 1010.

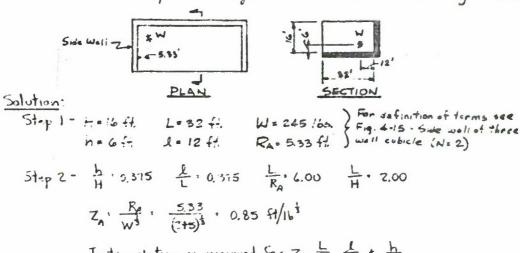
APPENDICES

APPENDIX A

Sample Problems

### Example A-5 CLOSE-IN BLAST LOADS

Regard: Average scaled impulse on the side unall of a three wall cubicle from an explosive charge of 245. The which is fully vented.



Interpolation is required for ZA, L 1 + h.

Step 5 - Determine & tale life the values of In From Figures 4-28 thru 4-42 (se. Tile 4-16 for No. 2) for: 4/2.6.00, ZA=0.85 contempolate by instect or ) and for values given for by , 1/2 and 1/H. Ser Toole A-1.

Step 4- a. Plot Ib versus H for the values of 1/2 and constant 1/4. = gure A-3

b. D to mo I, or \(\hat{H}\) 200, \(\hat{H}\) 2.15 1 various \(\hat{L}\) ratios by entering Figure A-3a with \(\hat{H}\)\) 2.00

生	I.
010	240
0.25	210
0.50	140
0.15	170

a Repeat whom adop for H . 0.20, 0.50 4 1.75 by entering Figures A-36 thro A-3d with Fr 200. Tabulate results

TABLE A-1

TABULATION OF  $i_b$  FOR L/RA=6,  $Z_A$ =0.85 AND VARIOUS L/H.  $\ell$ /L AND h/H RATIOS

		. 75	58	80	130	230	4-4
	0.75	. 50	67	95	145	2.50	15-4
		. 25	77	115	170	260	4-40
		. 75	65	95	145	230	4-39
20	9.0	. 50	75	108	170	250	4-38
RAI	0.50	. 25	96	130	200	280	4-37
VARIOUS L/H, L/L AND H/H RAIIOS		.75 .10	130	180	260	310	4-36
L AN		. 75	7.5	125	200	245	4-35
1, K	0.25	. 50	06	140	225	265	4-34
12 17	0.	.10 .25 .50	110	165	240	285	4-33
ARIOC		. 10	135	205	270	320	4-32
>		.75	96	150	200	225	4-31
	0.15	. 50 . 75	105	165	225	245	4-30
	0.	. 25	125	183	255	280	4-29
		. 10	135	210	230	310	4-28
	н/ч	L/H	0.75 135	1.50	3.00	6.00	Figure 4-28 4-29 4-30 4-31 4-32 4-33 4-34 4-35 4-36 4-37 4-38 4-39 4-40 4-41 4-4

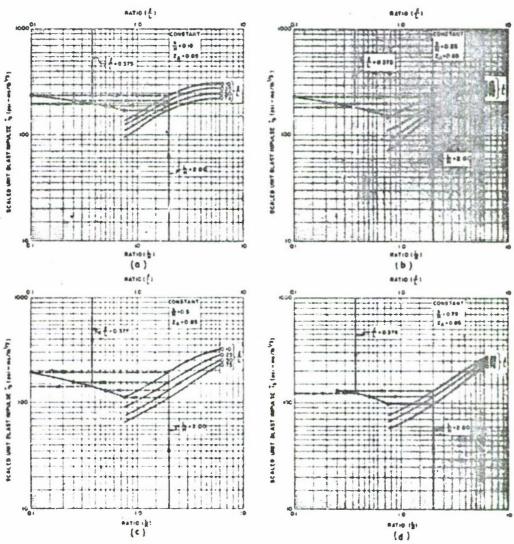


FIG. A-3 INTERPOLATION OF SCALED IMPULSE FOR L/H and 4/L FATIOS

- d. On each MH chart, plot is (Steps 46 44c) versus & (upper abscisse of Figures 4-3a thru A-3d)
- e. Determine Is for £ . 2.775 pi, each 1/4 chart by entering Figures A-32 thruA-3d with £ . 2.315 + reading curves plotted in Step 4d.

H	I.	
0.15	137	Figure A-31
0.25	135	Figure A-36
250	110	Figure A-3C
0.75	123	Figure A-3d

F. Plut IL (Step te) vasus 
$$\frac{h}{H}$$
. Figure A-t

Step 5 - For  $\frac{h}{H}$  = 0.375 read IL = 160 parms/16 on Figure A-t.

Lb =  $160(2AS)^{1/3} = 1000$  ps1-ms

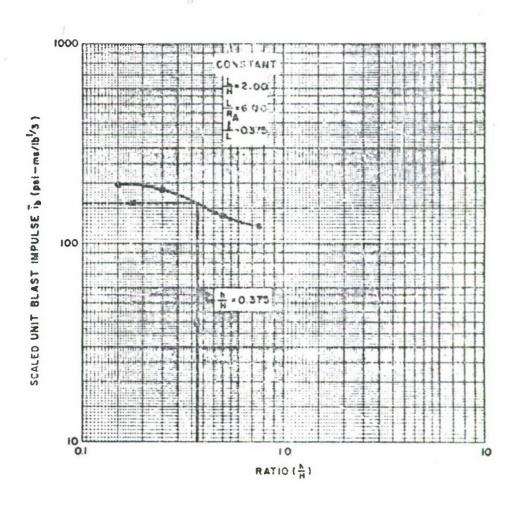


FIG. A-4 INTERPOLATION OF SCALED IMPULSE FOR h/H RATIOS

CARD NO. 1

rion (prime card)	The state of the s	3	
PROPUSA IDENTIFICATION (TIME CARD)	The state of the s	1 poner en An	CB

CAMD NO. 2

711	REPLECATION CODE F R L S R S L O R I I I O P D G D O F R H E	EH	0
70 11 72 73	REPLECATOR C F R L S L O B I I O F T R		\
7.2	E 00 %	0	
.1.	# HOO	22	-
70		_	
	$\rightarrow$		
70 61			
12	MIN. DIST. OF CHARGE TO ADJ. WALL	l it.	12.
9.0	HEIGHT OF CHARGE AEOVE FLOOR	h Ft.	6.
31 40 41	им.т. Тепоти	L Ft.	33.
30	J.1	٠.	
21 30	WALL	H Ft.	16.
20	20 K	ຸສຸ	5
11	THOUGH	W Lbs.	245.
10	DIST. OF CHARGE FROM WALL	RA Ft.	5.33
1	DIS CHA	II.	ς,

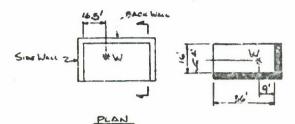
FIGURE 4

INPUT SHEET

The second of th	INKUI
DISIVICE OF CHARGE ERDY BLAST HALL	£1. 5.32
CHAP GE ME TOHIL	LAS. 245.00
OLAST, HALL HEIGHT.	FT. 16.00
PLEST MELL LENGTU	FT. 32.00
HEIGHT OF CHAPGE ABOVE GROUND	FT. 6.00
MIN. DIST. HETWEEN, CHARGE C. ADJS. WALL FT.	FT. 12.00
300 T 11 15 1 F 1 F 1 F 1 F 1 F 1 F 1 F 1 F 1	1 0 1 0
	Cut Put
REFLECTING SIMFACE	IMPULSE PSI-MS
and the second s	enter and an enter an appropriate and appropri
יויט איטניון	631,75
LEFT STOE WALL	326.40
	TOTAL 258.15

# Example A-6 CLOSE-IN BLAST LOADS

Regulved: Average scaled impulse on the back wall of a three wall cubide from an explosive change of 4500." The cubicle is fully vented.



Solution:

5tep 1 - H = 16 ft. L = 36 ft. We 4500 ios. terms see Fig. 4-15

N = 4 ft. L = 9 ft. RA = 16.5 ft. Deach wall of three wall cubicle (No3)

5tep 2 - h = 0.25 L = 0.25 L = 2.16 L = 2.25

ZA RA 16.5 (+500)3 = 1.00 ft/163

Interpretation is required for L

Step 3 - Determine the values of In from Figure 4-47 (determined from Fig. 4-16 for N=3, 1/4=0.25, 1/2=0.25) for to ratios of 0.75, 1.50, 3.00 \$6.00.

H	乙。
0.15	3.5
1.50	480
300	530
6.00	570

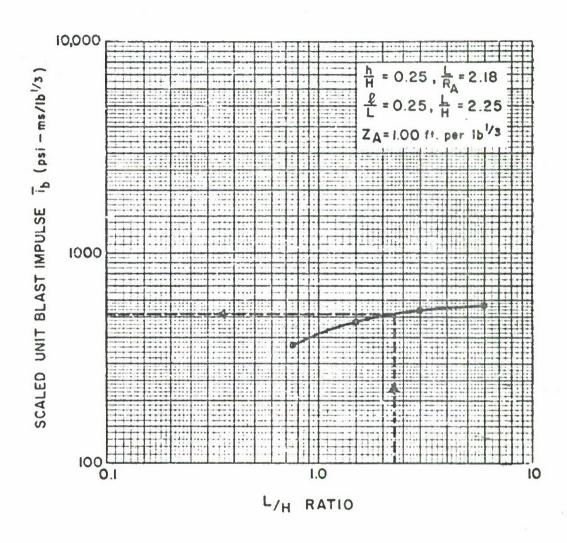


FIG. A-5 INTERPOLATION OF SCALED IMPULSE FOR  $\frac{L}{H}$  RATIOS

18

CARD 30. 1

PRODUCT IDENTIFICATION (TITLE CARD)

1 PROBLEM AG

CARD NO. 2

	70 71 72 73 74	REFLECTOR CODE	ZHO:	14 14 E4	-
	13	1	13 14 15 23 14 15 23 14 15	ω -	1
	72	.F.C.	200		0
	7.1	REFI	2,20	o ==	0
	102	1	_		>
	1		$\rightarrow$	<	
	61	/			
	50 51 50 61		MIM. DIST. OF CHARGE TO ADJ. WALL	& Ft.	0.
			HEIGHT OF CHARGE ALOYE FLOOR	h Ft.	4.
-	21 30 31 40 41		MALL	L Ft.	36.
			HEIGHT	H Ft.	16.
	10 11 20		CHARGE	W Lbs.	4500.
	1 10	-	DISI. OF CHANGE	RA Ft.	16.5 4500.

FIGURE 4

INPUT SHFET

0
4
F
2
-
-

DISTANCE OF CHARGE FROM BLAST WALL	16.50
CHAP GE WE IGHT	LAS
BLAST HALL HEIGHT	FT. 16,00
SLAST MALL LENGING	FT. 35,90
HETCHT OF CHARGE ADONE GREWIN	FT
MIN DIST. BETWEEN CHARGE C. ADJ. WALL	FT. 9,00
Prelective cone	1 0 1
	WI PUT
REFLECTING SURFACE	IMPLISE PS I-MS
69013	4340,05
LFFT SINE WALL	2744.60
RIGHT SIDE WILL	1566.15

### Example A-8 CLOSE-IN BLAST LOADS

Regulard: Avirage scaled impolse and maximum mean pressure on the roof slab of an enclosed cubicle with a small venting area from an explosive charge of 3. The cubicle Jimensions are as shown below.

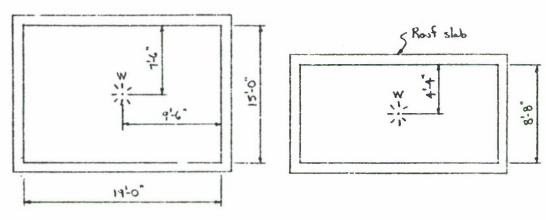


Fig A-7

Step 1- H= 15 Ft. L= 14 Ft. W= 3" For defication of terms are h= 7.5 ft. L= 14 Ft. R\_A +33 ft. Secure 4-15 - Four was:

h= 7.5 ft l= 7.5 ft R\_A +33 ft. Secure with roof (No.4)

Step 2- H= 0.50 L= 7.50 L= 7.51 H= 1.27

 $Z_4 = \frac{R_A}{W^{\frac{1}{6}}} \cdot \frac{4.33}{(3)^{\frac{1}{6}}} \cdot 3.00 \text{ St/lb}^{\frac{1}{6}}$ 

Interpolation is required for 1.

5t-p3- Determine the vitue of Is from Figure 4-62 (From Figure 2-6 for N=4, 1/4 = 0.50 & 1/2 = 0.50) for the nation of 0.75, 1.50, 1.50 and 6.00.

### Problem A-6 CLORE-IN BLAST LOADS

Problem: Determine the average scaled impulse and maximum mean pressure on the will of an enclosed cubicle from a contained, partially vented explosion.

# Procedure:

Step 1 - Select from Figure 4-15 the structural configuration which will define the rumber (N) and location of effective reflecting surfaces for the wall of the structure in question. Determine the charge weight W, and as defined by the structural configuration chosen above, the charge location parameters (Ra, r., L) and the structural parameters (L, H).

Step 2- Calculate chart parameters H, E, L, L and scaled distance ZA.

ZA: Ra Wt

Steps 3,415 - Following the procedure outlined in Froblem 5, determine in conforming to the above parameters.

Step 6 - Calculate charge-volume rate (W)

Step 7 - For calculated W, read pm from Figure 4-65

뉴	I.
0.75	74
1.50	37
3.00	112
6.00	171

Step 4 - Plot In versus H.

Figure A-8

Step 5 - For # 1.27 read I = 81 pse-ms/16 on Figure A-8

16 = 81(3) 1/3 = 117 ps/-ms

Step 6 - Calculate. charge-volume vatio (W)

Step 7 - For W . 0.00121 16/ft read Pmo 19 psu on Figure 4-65

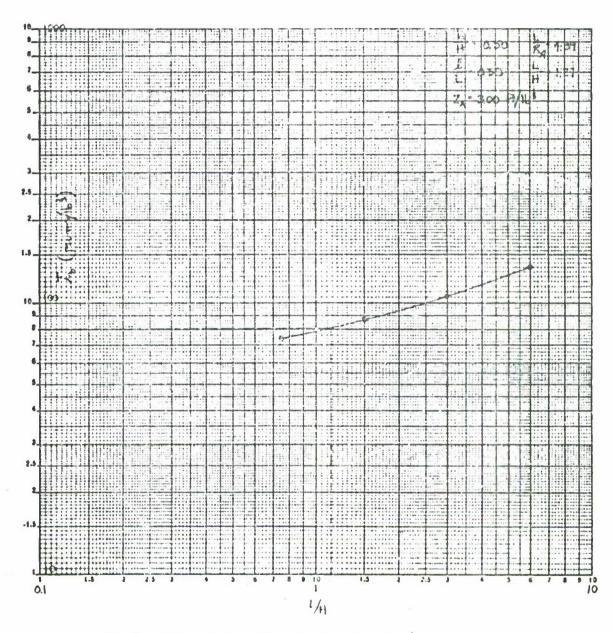


Fig. A-B Interpolation of Scale Impulse for L Ratios

CAND NO. 1

Г		
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CALU NO. 2

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70 71 72 73 74	REPLECTICE CODE	KHI		E	
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50 51		MEH.	2	7	9.5
50		RGE	S S S S S S S S S S S S S S S S S S S	ڈو	
41		NEIGHT OF CHANGE	Aboay	h Ft.	7.5
70		HJ			
31 40 41		WALL		L Ft.	19.
30		TI.		t.	
22		WALL		H Ft.	15.
50		용당		•	
		CHARGE WEIGHT		W Lbs.	8
11 01		DIST. OF	איזרר	ئړ	~
1		DISP.	FOX 3	RA Ft.	4.33

FICURE &

INPUT SHEET

FT	INPUT
1 1 007 AUT 14 PU LS E PS 1 - NS	29.93
DUT PUT  IMPULSE PS 1 - MS  22-93	EPON BLAST WALL  185.  107. GRCUND  FI.  11.  13.  14.  14.  14.  14.  14.  14
OUT PUT  IMPULSE PS 1 - MS	FEON BLAST WALL  LRS.  FI.  SVE GRCUND  FI.  SHRGE G. ADJA. WALL  FI.  LHPULSE PS.1-MS.  REDITED TO THE CONTROLSE PS.1-MS.
DUT AUT  IMPULSE PS 1 - MS	EPON BLAST MALL LRS. FI.  SYE GROUND FI.  SHARGE & ADJA MALL FI.  LRS.  1 1  OUTPUT  THPUSS PSI-MS
טיז אוד	TO E FEOR BLAST WALL  LRS.  11  LABOVE GROUND  FI.  11  LABOVE GROUND  FI.  LABOVE GROUND  FI.  LABOVE GROUND  FI.  LABOVE GROUND  FI.  LABOVE GROUND  FI.
	TO E FROM BLAST WALL FT.  11  12  14  15  16  17  18  18  19  19  19  19  19  19  19  19
	17
	17
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FI	TOE FROM BLAST WALL FT.  LRS.  4T Fi. 1
£1.a.	RGE EROM BLAST HALL FT.
fi: fla	FIA
11 FT. 1 TH FT. 1	

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# APPENDIX B

Fortran Coding, Compilation and Required Input Data

PELGATINNY SIDDIES FER REFERENCE   PERMISSING   PELGATINNY SIDDIES   PELGATINNY S				
C   P(CATION STRONG F CR RECETTING INCOME. d)   PRINTED CONTINUES   PRINTED CONTINUE		CPICAT	F1CA.0010	
DEFENSION   P.   1   1   1   1   1   1   1   1   1		C PICATINNY STUDIES FOR REFLECTING IMPJESE	P1CA 0020	
PREATED   PREA	0001	01 HENSION P 1:16 161 5 161 5 161 , PA(13, 5 1, PCR (	6,61,P502(16),P50(16),P1CA 003C	
2344(19) 349M(1901.2PLAN(19.33), 9PR.1120, 11, APT 190, 10, 10, 10, 10, 10, 10, 10, 10, 10, 1		1982(12) . 08(13) . 018(15) . 018(16) . 24(30 4(0)		
27 PS (30) (30) (30) (40) (40) (40) (40) (40) (40) (40) (4		23446 301 -846 A11301 -701 ANISH 341 - APP 1-130 - 11-	77130.11.40119130.11. 0164.0650	
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1   1   1   1   1   1   1   1   1   1		1211 17 - 1021 VAN 1 - 1021 17 21 103 11 104 105 104 105 - 6	PICA UNIO	
1   1   2   3   5   5   5   5   5   5   5   5   5	2000	01 MFN S1 UN (C CDE 141 HDG) [7]		
1	0003	7 71:(1)=0.15	PICAOMEN	
1	4000	214/21=0.455	P1CA 0250	
	50.00	Z TM( 31 - 0, 6		
	0000	7 18(4)=0.69	4	
	0000	7 :N( 51 m 77		
Title   1 - 4   1 - 1 - 4   1 - 1 - 4   1 -	6000	7 12 ( A ) a ( A)		
TVI(A) = 1, 4A   TVI(	0000			
Trial   1   1   2   2   2   2   2   2   2   2		The same and the s	- LICA GEO.	
	0100	1 12 14 1 m 1 . 4 m	PICAOS	
	(1)	7. (°) N. Z	P1540720	
	9912	1 741 101 = 2.7	PICAGGSO	
	0.013	7 714 1 1 1 = 5, 1	P15 A 03 % O	
HC (191 2) - (1, 12 5) HC (191 2) - (1, 12 5) HC (191 3) - (2, 12 5)	61014	7 [1] [ 1 ] 3.7 3	DICADIS	the same of the same form the same of
HC 114 (2) 1 (2) 2 (3) 2 (4) 1 (4) 1 (4) 2 (4) 2 (4) 3	8	36 70 0 = 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0750 4050	
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HCON (1) 12, 25 HCON (5) 10, 43 HCON (5) 10, 43 HCON (1) 12, 40 HCON (1) 12, 40 HCON (1) 12, 40 HCON (1) 13, 400, 40 HCON (1) 13, 400, 40 HCON (1) 13, 400, 40	100	6.2 (* Pr. (.2 (F. (.2)))	PICACS	
HCON (4) = 6, 375 HCON (5) = 6, 0.75 HCON (7) = 6, 0.75 HCON (1) = 7,	001	140 114( 31 = 0, 2 \$	PICANSHO	
	1100	MC 11N1 41 = Co. 375	P1CA 0390	
HCONTRIBLES HCONTR	(100)	1(C 0.1( 5) = 0. 5	P1CA 04C0	
HOWER 31 8 8 1 8 1 8 1 1 1 1 1 1 1 1 1 1 1 1	6020	11C Ditt 61 = U. 75	P1CA 043 0	
HCOVER   1-1-5 HCOVER   1-1-5 HCOVER	0021 **	* CONT 71 = 1 = ()	P1C4 0420	
HCON(10) = 2, 10 HCON(10) = 3, 00 HCON(11) = 5, 00 HCON(11) = 3, 00 HCON(11) = 3, 10 HCON(11) = 3, 10 HCON(11) = 3, 10 HCON(11) = 3, 10 HCON(11) = 1, 10 HCON(1	0000	HC 0'41 R1 a1. 5	P1CA0430	
HCUME [101 11.0 0 HCUME [101 11.0 0 HCUME [101 11.0 0 HCUME [101 11.0 0 HCUME [101 11.0 0] HCUME [101 11.0 0] HCUME [101 10.0 0]	1.11.1	11 Ovi (2) 27. (1	P1: 8 0440	
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PCON131-22-31 PCON141-372-31 PCON141-372-0 PCON141-3100-3 PCON171-3100-3 PCON171-3100-3 PCON171-3100-3 PCON171-3100-3 PCON171-3100-3 PCON171-3100-3	200		00404317	
PCON 3 1 223 1 PCON (2) 523 1 PCON (2) 520 0 PCON (3) 520 0	6000	PC (1/1/2) = 1,0 H	D 1C 4 0 4 4 0	
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PG 021 C = 132 0 PC 021 T = 300, 0 PC 021 T = 300, 0 PC 021 T = 300, 0 PC 021 T = 1000, 0 PC 021 L D = 1000, 0 PC 021 L D = 1500, 0 PC 021 L D = 1500, 0	- 0100	PCMI41 *5P. B	P1CA 0510	
PC CH (1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	1100	PC 0'11 "1 1 1 2 0	P.1C. 04.20	
PC (1947) = 3 00 a, 3 PC (194 0) 1 4 5 0 a, 0 PC (194 1) 2 1 2 0 0 a, 0 PC (194 1) 1 = 1 0 0 0 a, 0 PC (194 1) 1 = 1 0 0 0 a, 0 PC (194 1) 1 2 0 0 0 a, 0 PC (194 1) 1 2 0 0 0 a, 0	0031	Pf R:11 61 2300, A	P10A0930	
PC (1 of 0) 4400, 0 PC (1 of 1) 4500, 0 PC (1 of 1) 400, 0	6633	PC (1514 71 = 3 041 . 3	P1CA 0543	
PCON(31 +500,0 PCON(13) =700,0 PCON(13) =100,0 PCON(13) =100,0	0014	PC   14 (8) 14 00. 0	P1C40550	
PCP14 131 700.0 PC 114 111 = 1000.0 PC D4 121 = 1500.0 PC P4 131 = 2000.0	0035	0.000% (1.170.00	P1CA 0560	
PC 04 121 = 1000.0 PC 04 121 = 1500.0 PC 04 131 = 2000.0	6035	PC PH(13) = 700, 0	P1CA0570	
PC 04 121 # 500.0	0037	PC	PICACSRO	
PC nytt 131 *2 000.0	1500	PC 04(12) al 500. 0	P1CA 0590	
A - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2	2500		PICADADO	
		A \$100.00 July 100.00	000000	

0042			PICAOSZO	
00043	0 000M141 = 5000 0		P1CA 063 0	
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0045	***			
0044	. 5	PHILLS 11 . J. L. NI. 1: 1 . 1 . 1 . 1 . 1 . 1 . 1		-
0047		,9031 MZ , ( ( PA ( I , J ) , PCR ( I , J ) , J= 1, N 2 ) , I=I , 13 1	PTCA 0660	
0000	READ IS 4031 N4 + (PSCZIII) PSCIII I I I I I N4 I	SC(I), Jel, N41	P1CA 0670	
2400	5 -	(I), I=1,N51	PICACEBO	
6400	RE40 ( 5 .903) NA . (PIPZ(II) . PIR(II) . I=1, N6	IR(11, 1=1, N6)	PICA0590	
0000	18.9019 CH			
0051	301 FORMAT(1744)			
2000			01040750	
2000	2004		200	
- 5003				
6054	804 FORMATILX . 17441			
0.055	READ(5,917) R. H. H. EL, HLIT, ELLIT, LICODE(1), I=1,4)	(ICODE(11), I=1, 4)		-
9500	917 FURMATIOF10.0.10x,411)			
0057	N.7 I TE ( 5, 924) R, M, H			
0000	924 FORMATI ///SUX SHINPUT .// .10X .	Х.		
	TANC	WALL	FT 10%, F 10.2//10%.	
			1 ac . 10x. c 10. 2. //10x.	
	F1000000000000000000000000000000000000			
	2 42-10 LAZI MALL MELLINI	-	Ayok!	
4.500		E ( 1 ) + [ m 1 + 4 )		
0000	225 FUNDA IL / 10x1			
	1 45/18LAST MALL LENGTH		FT ., 10x, F10.2, //10x,	
	2 45 HIF IGHT OF CHARGE ABOVE GROUND		FT . 10x, F10, 2, //10x,	
	EFN CHARGE	DJ. WALL	10.2, //10x.	
	4 4 SIPEFICOTION COE	, 9x, 4(2x, 1)	2×,(11)!	
0061				
0042	926 FIRMATI ////SOX,6HOWIPHIT///IOX,20HREFLECTING SURFACE	SHAEFLECT ING SURFACE		
1800	₩C #1		P1CA 0790	
0.066	10.13.0.0		P CA 0800	
0055	2 COMPINE			
0000	74.0 (100.0 933333			
2400	CA1 DATEGRO EL CLEAT DE LA 1018T. 78	A 10		
6000	151 M - FO. 2. Do. M - FO. A. DO. TO 423		to compare and compare and compared to the com	-
9989	CALL CRIDGE HITT AND HERDER			
0073	CALL CRIDIFICATIONSPLANTOLY			
0071	TEL MONE I T. A. MONE			
00.12	Programme Contraction	The design of the last of the	A SECURE OF SECURE ASSESSMENT	to supplie the same of the same of
0073	923 CONTINUE			
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2000	THE SECOND CONTRACTOR OF THE C			
	CANADA O SALINA WHILL		0.00	
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11.00	\$ IF1/18/18-15-016.4	P 1CA 0940
21.00	7 40 15 (6 ,916)	
0093	o Jr og	P1CA 0960
9000	1656=165 9	P1CA0970
2 400	RODNESTO	P1C* C9#0
00118	SALAZ COZ SOL	P1CA 0990
1000	Syn = 2 - C+28/E9LH+SPH1	P1C41000
1100	60 3 1 41 4 ML	P (C & 1010
2643		PICA1020
0600	ZW(I)=SOUT(Z40020(1A-),O10SMA)002)	P1C41030
1000	21, (=1,000, (-0,	P1C41040
5000	(F (+8AR-HC DN( J) 11001 -1002	P(C±1050
5000	- 1	P1C#1060
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5000	CALL MACHINAR PERSON STREET STREET STREET STREET	PICAICEO
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0010	1000 / 2 / 2 / 3	PICA1130
1010	CO 10 1009	P:C41140
0102		-
0103		P1C41160
1010		P1CA1170
5010	1004 (F (2-104R) -44H) 2 3 9	PICA1180
0106	6 PHONG Laction	P1C41150
1010	7 PH14R(11 - P-4RAR)	P1CA 1200
0103	47 00 46 (-1, 41)	P1CA121G
0100	45 4118AH (1) = PHSAR (1) = R (H/ (2,0 = 78)	P1CA1220
	FIM PPLAN	P1CA1230
0110	1441=2	PICA1240
1110	144 V SM + 1	PICA1250
011.2	00 63 (*) this	P1C41260
0113	7PL1N(1,11-SCRT(2N(1)++2+MBAR++2)	P1C4127C
-	10. 48 Jez 14M	71CA1280
01195	1-7-5	P1CA 1290
2114	701Pt = 50RTf PM(1) 0020 (HBAR+805 MB)+022)	gent)
0117	TF STO = 0, U2 = 200PL	P1C4 2310
0114	חח 2000 אין יום	PICA1320
011.9		PICA1350 .
0120		PICA134G
1121	2003 (PLANII, 3) = 100PL	P:C41350
5715	60 TO 48	P1CA1340
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-	and a Vivian of the control of the c	

	10.28				
20. ELANLI, JUESCE 2204.209 20. ELANLI, JUESCE 2204.209 20. ELANLI, JUESCE 221.201.21.21.11.11.557.887. PHBARI.HIL.NL 1.HCONIII) 20. ELANLI, JUESCE 221.201.21.21.21.21 21. ELEVANTA 2. 20. 20. 20. 20. 20. 20. 20. 20. 20.	10.29	0128	HOL-PHBARI-B-SHB	P1C41420	
10	10	0129	F (HOL   2 CB + 2 O9 + 2 O9	P1CA1430	
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		24,10	20n ZSTAP TH SORTEZDOPL002-HPAR0023	PTCA1460	
11	11   11   12   12   12   12   12   12	0133	62 CALL MRAIMBAR, PZ (1 . 1 ) F HIL . 1 1 ART . PHBARL . NI . NI . NI . NI . NI .	PICA1470	
115   212   544 to 15 to 16	115   212 6 542 6 547	-0114	[F(PHYAR1-2,3)211.211.212.	P.1C41430	
110   220	110   22	0135	212 8 543 x 8 5 44	PICA1490	
13   220   PHEART   2.0   0.139   2.21   PHEART   2.0   0.139   2.22   PHEART   2.2   PHEART	13.0   220   PHAR 12.0   0.113   220   PHAR 12.0   0.113   221   PHAR 12.0   0.114   22.1   PHAR 12.0   0.114   22.2   PHAR 12.5   0.114   22.2   PHAR 12.5   0.114	0136	IFIPHMARI-RSWBJ2209221,9221	PICA1500	
1990   222   PHE ABL   95 MO   1990	0130   221 PHEARL   9584   1014   1	.0137	27C PHBAR1=2.0	PICA1510	
139   221   PHPARI 1-92-1HPARE PHEARI 1-621     142   212   274=598   170   170   170   170   170     143   221   274=598   170   170   170   170   170   170     144   270   1-244   170   17	0139 221 PHPARIL 9580 0140  212 ANE SORIUS TRATE *** LIMARE PHEARIL 921  0141 211 ANE SORIUS TRATE *** LIMARE PHEARIL 921  0142 211 ANE SORIUS TRATE *** LIMARE PHEARIL 921  0143 54 70 11 ANE BORIUS TRATE *** LIMARE PHEARIL 921  0144 54 70 11 ANE BORIUS TRATE PHEARING PHEAR	0138	Gu 10 222		
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0141 211 GU 10 2 1 10 10 10 10 10 10 10 10 10 10 10 10 1	0141 21 C 10 10 2 1 C 10 10 10 1 C 10 10 10 10 10 10 10 10 10 10 10 10 10	0110	~1	P1CA 1540	
0142 211, EN 1-50 A1 (21) A1 (21) A2 (10) A2 (10) A3 (		0141		PICA 1550	
	0144	0142	- 1	PICA1560	
0145	0145	0143	1F12U OPL-24E 1159,50,60	PICA1570	
		0144	191.1.2	PTCA1500	
14.7   200_251AF120_49304251APT   10.401   10.	10140   200 251/R 120,0970251APT   10140   1	0145	1F1201	PICA1550	
0147 52 7425141 0150 0160 0151 0150 0150 0160 0150 0160 0150 0150 0150	0147 59 74-25 1847 0147 0147 0147 0147 0147 0147 0147 01	-0146	Z S I A P T = 0	P1C41630	
10   10   20   10   20   20   20   20	0149 60 7017407012 ME W	0147	Cu To 42	PICA 1510	
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15   15   15   15   15   15   15   15	0150 0151 210 2.51 R T = 1, 00010 2.51 R P 0151 0155 0156 0157 0157 0157 0157 0158 0158 0159 0159 0159 0159 0159 0159 0159 0159	0149	60 10 509		
15   15   15   15   15   15   15   15	0151 210 218 T = 1, 00019 210 0 0151 0153 60 T0 62 0154 60 COMITING 0155 01 62 COMITING 0155 01 62 T = 1, 00019 2110 0 0151 0155 01 64 DE MILL 0155 01 65 T = 1, 00019 2110 0 0151 0155 01 65 T = 1, 00019 2110 0 0151 0155 01 65 T = 1, 00019 0 0151 0155 01 65 T = 1, 00019 0 0151 01 65 COMITING 01 65 COMITING 01 65 COMITING 01 65 COMITING 01 65 T = 1, 00019	0170	R 347-14097-1102 09	P.ICA 1990	-
0153 0154 0155 0154 0155 0155 0155 0155 0156 0155 0157 0157 0158 0159 0159 0159 0159 0159 0159 0159 0159	0155	1510	0123656501331111111111111111111111111111111		
4.0 CONTINUE 6.3 CONTINUE 7.0 CONTINUE 7.1 CALL LAGINTEPSOZ (11 , PS OL 11 , 2 P LA , 2 P S O , MA ) 7.1 CALL LAGINTEPSOZ (11 , PS OL 11 , 2 P LA , 2 P S O , MA ) 7.2 CALL LAGINTEPSOZ (11 , PS OL 11 , 2 P LA , 2 P S O , MA ) 7.2 CALL LAGINTEPSOZ (11 , PS OL 11 , 2 P LA , 2 P S O , MA ) 7.2 CALL LAGINTEPSOZ (11 , PS OL 11 , PS OL	40 CONTINCE 63 CONTINCE 63 CONTINCE 63 CONTINCE 64 CONTINCE 715 2PLA=1PANILLA) 717 2PS(1 12 12 PS) 718 12 PLA 718 2PS(1 12 12 PS) 718 12 PS 71	1	-		
63 CONTINUE  63 CONTINUE  64 CONTINUE  65 CONTINUE  65 CONTINUE  66 CONTINUE  66 CONTINUE  66 CONTINUE  67 CONTINUE  68 CONTINUE  69 CONTINUE  69 CONTINUE  69 CONTINUE  60 CO	63 CONTINCE  DO 65 1-1 ML  EFIZER-16.01214.215  215 2PLA-16.0214.214.215  215 2PLA-16.0214.214.215  215 2PLA-16.0214.214.215  215 2PLA-16.0214.214.215  215 2PLA-16.02  215 2PLA-16.02  215 2PLA-16.0214.214.215  PICAL  A MCACL	5510	100	01041400	
03 LUN I WLE 00 LUN I WLE 00 CA Jan, WN 10 C4 Jan, WN 15 PLA=12 AM 11 Jan 215 ZPLA=12 A. 01214 J215 215 ZPLA=12 A. 01214 J	03 CON 11 NCE  10 64 J=1, NK  10 64 J=1, NK  15 ZPLA=16.01214.215  215 ZPLA=16.0214.215  215 ZPLA=16.02  215 Z	010	1 ( ) 1 ( )	20071000	
215 2PLA+1-4.0 1214-215 215 2PLA+16-0.0 1214-215 215 2PLA-16-0.0 1214-2	Fitzpla=16,01214,214,215   Fitzpla=16,01214,214,215   Fitzpla=16,01214,214,215   Fitzpla=16,01214,214,215   Fitzpla=16,01214,214,215   Fitzpla=16,01214,214,215   Fitzpla=16,01214,214,215   Fitzpla=16,01214,214,215   Fitzpla=16,01214,214,115   Fitzpla=16,01214,114,114,114,114,114,114,114,114,114	6100	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
215. 2PLA=2 PLAMI1.1)  215. 2PLA=16.01214.215  216. CALL LAGINT PSOIL 1. 2PLA. 2PS 0. N4 1  214. CALL LAGINT PSOIL 1. 2PLA. 2PS 0. N4 1  214. CALL LAGINT PSOIL 1. 2PLA. 2PS 0. N4 1  214. CALL LAGINT PSOIL 1. 2PLA. 2PS 0. N4 1  215. CONTINUE  217. CALL LAGINT PSOIL 1. 2PLA. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1. 2PS 0. N4 1  218. CALL LAGINT PSOIL 1.	215_2PLA=2PLAMI1_2J 215_2PLA=16+0.01214,215 PICA1 215_2PLA=16+0.0 215_2PLA=16+0.0 215_2PLA=16+0.0 215_2PLA=16+0.0 65_CONTINUE 65_CONTINUE 65_CONTINUE 66	210	44	P1CA 1710	
215 ZPLA=16.00 214.215 215 ZPLA=16.0 215 ZPLA=16.0 216 CALL LAGINTPSCZ (11.PSC(11.ZPLA, ZPS 0.N4) 214 CALL LAGINTPSCZ (11.PSC(11.ZPLA, ZPS 0.N4) 215 ZPS (1.J)=250 215 ZPS (1.	215 2PLA=16.01214.215 216 2PLA=16.0 216 2PLA=16.0 216 2PLA=16.0 216 2PLA=16.0 216 2PLA=16.0 217 2PS 218 1-1-2PS 219 2PLA=16.0 219 2PS	4.10	10	P1611720	
215 2PLA=16.0 214 CALL LAGINTFSOZ(1), PSO(1), 2PLA, 2PS 0, M4)  65 CONTINUE  67 ANGLIS - 13 - 0.0  67 ANGLIS - 13 - 0.0  67 ANGLIS - 13 - 0.0  68 CONTINUE  69 CONTINUE  70 20 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	215 2PLA=16.0 214 CALL LAGINTESOZIII ,PSOIII , 2PLA, 2PS 0, M41 64 2PSII , J1=2PSO 65 2PSII , J1=2PSO 65 CONTINUE 70 A6 1=1, ML	0152	[F1701A-14, 01214, 214, 215	P1CA1730	
214 CALL LAGINTIPSOZIII , PSOIII , 2PLA, 2PS 0, N41 64 2PSII JI = 2PSO 65 2PSII JI = 2PSOZIII , PSOIII , 2PLA, 2PS 0, N41 65 2PSII JI = 1 , NA 65 2PSII JI =	214 CALL LAGIMIT PSOZ (1) .PSO(1) .2PLA. 2PSO.N4) 64 2PS(1 .J) = 2PS) 65 CONTROL 65 CONTROL 65 CONTROL 66 CONTROL 67 CONTROL 67 CONTROL 67 CONTROL 67 CONTROL 67 CONTROL 68 CONT	0169	ZPLA=	P1CA1740	
64. 2P S(1 1)1-2P S(1	64. 29 S(1 1 J1 2 2 9 S)  65 CONTINUE  70 A 6 1 3 1 NA  ANG 2(1 1 J1 - 0.0)  67 A 3 1 NA  ANG 2(1 1 J1 - 0.0)  68 CONTINUE  69 CONTINUE  102 DO 61 1 - 1 A NA  1102 DO 61 1 - 1 A NA  1103 DO 61 1 - 1 A NA  1104 DO 61 1 - 1 A NA  1105 DO 61 1 A NA  110	10.7	C344	P1CA175C	
65 CONTINUE  00 A6 1=1.NL  102 DD 01 1=1.NL  104 AM-1 21205.206.205	65 CONTINUE  07 -06 I = 1,1MLI  07 -06 I = 1,1MLI  07 -06 I = 1,1MLI  08 A MC 27 5 - 15 - 00 0  17 - 2756  17 - 2756  66 CONTINUE  66 CONTINUE  102 DD	0162	11892	PICA1760	
00 66 1=1.NL1 00 57 J=1.NL 00 67 J=1.NL 00 67 J=1.NL 00 67 J=1.NL 00 60 CONTRUE 00 00 1 1-1.NL 00 00 01 00 01 00 00 00 00 00 00 00 00 0	00 46 1=1.NL1 00 45 J=1.NL 00 47 J=1.NL 00 47 J=1.NL 00 4 ANGILL 10 40 4 ANGENTIL 0=1 W DARK (FELENTIL JISO 21) (HEART FOLDMIN) TO 10 10 10 10 10 10 10 10 10 10 10 10 10	41910	CONT	P1CA 1770	
00 57 J=1,NN AMCRIT - 13 -0.0  AMCRIT - 13 -0.0  17.2756  17.2756  66 CONTINUE  4MM+0  102 DD 31 1-14.NL  FICAL FI	A WAST 1 - 11 - NA A WAST 1 - 11 - A A A A A A A A A A A A A A A	0144	P	P1CA1780	
## ### ### ### ### ### ### ### ### ###	## ## ## ## ## ## ## ## ## ## ## ## ##	0165	=	PICA 1790	
17.2.756  17.2.7	17.2356  17.2356  17.2356  17.2356  17.2356  17.2356  17.2356  17.2356  17.2356  17.2356  17.23556  17.23556  17.23556  17.23556  17.23556  17.23556  17.23556	0146	AWG2(1 t 3) =0.0	-	
66 CONTINUE  4MM=0  4MM=0  102 DO 51 1=1.ML  PICA1  PICA1  PICA1  PICA1  PICA1  PICA1	66 CONTINUE 4M+1 102 NO 01 1-14NL 1FF 4M4-21205,206,209 1C41 1FF 4M4-21205,206,209 1FF 4M4-21205,206,209 1FF 4M4-21205,206,209 1FF 4M4-21205,206,209 1FF 4M4-21205,206,209	0147	67 470 [C 1 - J1 - A 743 BORT   1 - D = (NEAB / A 8 A A A -   - J   10 B R 7 / CEBAA / FF FA   1 - J   7 - J - J - J - J - J - J - J - J - J -	PICAL	
102 DD 51 1 1 1 ML PICAL	444-1 402 00 01 1-14NL  102 00 01 1-14NL  164 444-21205,206,205  164 444-21205,206,205  165 41PLANI 1) -4 7.74(5.901 (1.0-(7.8/2.4(1).10-2.1/(1.8/2.4(1).1)-5.7.2.956)  164 164 164 164 164 164 164 164 164 164	0164		-	
102 00 01 1 1 1 NL 1 PICA1  104 WH - 21205,206,205  104 WH - 21205,206,205	102 00 51 1-11NL1 102 00 51 1-11NL1 1F1 4MM-21205,206,205 PICA1 2 (6 ALPLANI!) - A TAN(SQNI(11,0-17ALZNI!) 10-2) L(1AN ZNI!) 1) 957,2956 PICA1	0157		-	
102 00 81 1-11NL 1F1 4MH-21205-206-205	102 00 91 1-11NL 1F1 4MM-21205,206,205 1F1 4MM-21205,206,205 2 (6 ALPLANII) - A TAN(SQRI(11,0-17A/2K(11)0-2)/(12A/2K(1)1) \$7.2956 PICAL	0170	0.1117		
1F(4MM-21205,206,205	1F1 4M4-21205,206,209  2 (6 ALPLANI) - A TAN(SQRI(11,0-17A/2K(11) 10-2)/(12A/2K(1)) 10-57,2956 PICAL  PICAL	0171	_		
THE PROPERTY AND	Z (6 ALPLANII) - A IAN(SQNI(1,0-(1,1/2,1) (1,0)	0172			
2 (6 A LPLANI ) -A 17N (20N (1 0 - 1 7 N L) 1 0 0 2 / (A) ZNI I I 1 2 / 2 2 2 2		0173	266 ALPLANII) +A 13N(5QAI (120-(7A/ZK(1)10-2)/ (1A/ZK(1)1)0-57-2956	P1CA1880	

0175	17 CMP-11100.100.101	FICALGOD
0176	101 IF ( MMH-1) 201 ,201 ,202	PICA150
0177		PICA192C
0174		PICA1930
0179	202 ANG "A LP LANKII	P15A1940
0110		P1C41950
0131	100 44.6 -4.12111.11	P1CA1950
0142	182 IF(AN:+40.9) 92.83.83	P1CA1970
0133	P. 1F(2P:11,3)-22,1164,05,05	PICALORO
0134	85 DO 86 EN=1 .N2	PICA1990
0195	PAA(LN) -PA(18,LN)	P1CA2000
11.6	86 PPC 2 (LV) = PC R (1 M , LN)	P1CA2010
0147	CALL LAGIPAAILL, PPC RILL, ANG. CRALL, NZ!	PICA2020
0193	CHALIT, JI .CRALI	PICAZOIJ
. 143	60 10 69	PICA2C40
0110	84 1F(ANG-52.5) 87.85.85	P1CA2050
1610	87 IF (205(1, J) -9, R) 88, 49, 49	P1CA2060
0192		
0103	60.10.69	PJC4.2C80
0104	A8 CAALII, J) = 2.6	P1CA2090
2610	GO 10 69	P1C4 21 00
0196	1F12PS(1, J) -3	P1CA2110
0147	69 WAITE (6 1997)	
0108	70 x = 1	PICA 2130
0103	CO TO 72	P1C42140
0203	71 00 73 1-2-17	P1C32150
0201	1F17PS(1,1)-PCDN(1,1)74,75,76	P1CA216C
2070	74 4K=L	P1C42170
020 1	Gn 10 77	P1CA 21 90
9020	75 X=L	PICA 21.70
0205	(4) 70 72	P1CA 2200
.0.00	75 11 LP St 1 + JI - 7000.01 73.213.78	P1CA 2210
0207	73 CONTINUE	P1C42270
0.234	-	
0230	213 Kul 7	PICA 2240
- 6120	72 DD 79 KK=1.N2	P1CA 2250
0.21	PARKEL TANKE	PICA 2260
0217	74 PPCQ(KK) *PCA[K*KK]	P1CA2270
0.213	CALL LATIPARIII PPCATILIANG CRALLIANZ	PICAZZRO
. 4170		0422 4514 0422 4514
0715	C. (1) T() 6 M C. (2) C. (3) C. (4) C	P104 2300
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-		1.103.104	P1CA2410	
0	104	203,203,207	P1C# 2420	
0			P1CA 2430	
0	D6 00		PICAZ45G	
0	1224 P SPLANII, JI	P SPLANII, JI "CRALII, JI . J . L PSII, JI	PICA2450	
0	06	1 1 = P SP [A!](1 + J.	P1CA 2460	
	31 91 CONTINUE		P1CA247G	
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C	00 93	77	P ICA 2490	
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0		DUPLII, JI = SORTIZNIFI = +2 + IHBAR+5+5 SMBI = +2!	P1CA2510	
0	93	ANG 21 1 , JI.SA TANK SBRI KI. 0—K.ZNKI J.Z. 000 K.K. 11. 11. 11. 11. 12. 12. K.K.K. 11. 12. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	3PL [ Ja 1 1 1 1 9 5 P 1 3 A 2 5 2 0	
			PTCA 2530	
0	237 SUNTINE		PICA 2540	
0			P1CA 2550	
0			P1CA256C	
٥.	0240 1-1 501 DG 102 1-1 NI	יארו	PICA257C	
0		00 106 Jelykh	P1C42560	
0		PSPLANII , JI CCRALII , JI	P (CA 2590	
2	Pa A sp	17	P1C4 2600	
0	CALL	ASINTIPALLI PAZILI PRA, PAZZONSI	PICAZATO	
0		1,8	PICA 2620	
C		CALL LAGINTIPIAZ (11 , PIR (11, PAZZ, PIRR, N61	P1C42530	
0	105	P1 49	PICA 2640	
9	105		P ICA 2650	
0	A. m. results of the same		FICAZGEO	
٥	207	, NLI	PICA 26 70	
C		APRALLI 11 - FSPLANT -11 OCRALLI.11	PICAZSRO	
0		11,11	P1CA2590	
C		CALL LAGINTIPRILL PRILLIAPRA, APRIZ, MSI	P1CA2700	
0		1780	PICAZTIO	
0		CALL LAGINTIPIRZELL PIRCLL PPRZZZPPIRA, N61	P1CA2720	
.Э		-APIPR	P1CA2730	
0	5.2 CHYTINE		P1CA2740	
0			P1CA 2750	
0		N.I.	P1CA 2 760	
0		SUM(11-21(211,11-911911,NN)	PICAZTO	
2		14570P.2	P ICA 2740	
0	109	SUMIII = SUMIII+ PIIRII, JI = 4.0 + PIIRII, J+11+2.0	P.CA 2790	
0.	701	SIMPA VIII = SIIMILI /112 0 0 2 PHI	PICAZRIO	
70	1 601 100 160 1	=1 ,NLI	PICAZLIC	
0.2	AN 110 J.1 .W.	N.	PICAZAZO	
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9	57 SV( )] = 8 + 549	\$V( )   = A - S - S - S - S - S - S - S - S - S -	PICA 2840	

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	22.30.	7. T. L. 3. C. 2. K.	
0220	CALL LAGISVIII SPIIRIII SBAR, SPINT, NNI	P1CA287C	
0271	16143=11)165	PICAZENO	
0272	SIMPAVIII=51 MPAVIII+ 1APIIRII: 11-FIIR (I-11+APIIRII-1)-59 II II I16RHBAHP 1CA 2890	11111+RHBAHPICA 2870	
	1111/2.0	P ICA 2900	
0273	1C9 CONTI ALF	PICAZTIO	
3274	15 (% 101-11120 d 21 d 21	P1CA2920	
0275	120 00 11 t 1 "I + NLI	P1CA 2930	
0274	114 FILLY VILLE SE VAN 12 - 11 PV FILLY FI	P1CA2540	
1240	60 70 215	F1242450	
0278	323, Nett 191+1	P1C+2063	
U279	סט וזו ו-ן ימרוטר	P1CA2970	
0212	14]4	PICA2970	
0231	1-N=XN	PICA 2990	
0242	LIL FINAVINKI SIMPAYL II	P1CA 3000	
9263	11N+1+1 211 00	P (CA 10:0	
0244	NX+NL TOL◆I	P1CA3620	
6 24 5	112 FINAVINKI = SI MPAVIII	P1CA3C30	
0216	ALS HOYI = ML IOL+ MLI	P1C 4 3040	
0287	FISUM AF INAVILLE INAVINOVII	P1CA 3050	
0244	I-IVEN'STILL	P104 3060	
0233	00 11 1 -> .NSIDP.2	P 1 C A 3 C 7 O	
0530	113 FT SUM-FT SUM-FT NAV (11 0% D+FT NAV (1+102,0	PICA 3090	
0291	ANS( "C   =   SUM/(3.0 0 SPL)	PICABOLO	
0277		A	
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02.74	The state of the s		
5000			
0203	43.2 EAGAN TOTAN SALE 1000 LOW ETO 37.1		
7			
0244	929 WHIT 16.9341AKS(11		
0300	933 FIR 4: 1110x. SHPOOF .40X.F10.2/1		
100	23 10 21		
0332	WE TE 16,7371 ANSTER		
0 10 3	737 F024A 71 16K , 1 4HIFFT SIDE WALL, 31X , F10.2/1		
0334	177 to 00		
0303	WH TE 15,9341AESTED		
9060	234 FIRST TIOX 1 SHRIGHT 5106 WALL 1304 FIG & L.	Annual of the Control	
8000		PICABION	
0 100	ON CONTINUE		-
0310			
0.111	919 F DR 44 T ( 50x, 5H T F) 4 L . F 10. 21		
0312		P1CA 3130	
0313	116 'K. " WC + 1	P1CA 3140	
0114	60 10 (10)(11)(2,(11) (AC		
9110	7 194 1 194 - 41 1		

11 /1/2

PAIN DAI E - 69342 15/42/41	1	12 SAVETH HLI TOM-HLIJ HAFL	ELESAVE PICATEO	24. \$10.11	E FIR 44 T [ 12] 5. ZELO. 3   4 15. 44 . A4 . A2 ]	903 FORMATICALS MARKELL SEALLER THAN 0.00522 OR DIGGER THAN 5.01 PICA 3250	13, 710.3,	910 FORMATION AVERAGE REFLECTED TO 3.5 F. T.	ESS THAN 0.0625. SAIF TO NEXT CO. TAND OF THAN TOUR. OF US FO PSO. TOUGO.	914 FORMATIVATOR PERSONAL LARGER THAN 15.00 SKIP TO NEXT CASE! PICA 33 FU
	FORTRAN JY G. LEYE	0317	0320	0324	0325	0329	0333	4000	2650	0341

PAGE 2003

1001	SURROUTING HOACHBAP, CZ, PH. ZN, PHBARI, NI, NL I. HCON!	0010
2000		0020
0003	IF (HBAR-0, 0625) 5 4 7	0,00
00.14	5 WITC (5:905)	0020
1075	2 3	0000
6000	6 X *1	2703
0000	50 TO 8	0000
0003	7 :F(+348-0.125)9:10:11	0500
(000)	9 44.1	0100
0100	60 10 12	0110
1100	10 K*2	02120
0012	601 09	0130
5013	11 15 (4248-0.25)13.14.15	CI+O
9100	13 44=2	0100
3100	60 10 12	01.0
9100	24 K=3	0110
0011	F 01 05	C160
0018	15 IFFHBBR-0-375116-17-18	0100
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0000	22 4K=5	0300
01 00	GO 10 12	(310
01111	73 X = 0	0320
00.12	5.0 TO 8	0330
0011	24, 1F (HAB-1-0125,26.27	0340
7100		0350
0013		0360
035	26. K#7	C37C
1100	50 CT 05	03.60
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6100	28 XX=7	0000
0.00	60 10 12	C+10
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2049	5 - 22		00	0200
0000	60 10 12		0.8	0510
0051	35 K-10		90	0520
2500 6	60 TO 9.		90	0530
	36 15 HARAR-4, 0137,38,39		*0	0**0
0059	ついまれ いで		50	0550
0055	GO 10 12		50	0440
0000	38 K=1)		90	0570
0057	Gal 10 M	•	0.0	0580
0058	39 1F1484K-5, 0140,41,41		50	0500
9000	50 MK=11		90	0000
0000	GO TO 12		92	0190
0201	61 K=12		90	0620
6062	8 DI 42 Lel.NI		90	0630
0063	P22(L) "P2(KaU)		90	0640
5000	42 PHHILD APHIKOLD		90	0650
0005	CALL LAGINT (PZZKI) . PHH KI) . ZN. PHSANI, NI	MIL	45	5660
9006	RETURN		90	0670
0007	12 DIFIL WORR-HCONEMKI		CE	CESC
9000	00 44 L+1+N			0576
0000	14 x 1 / C 2 x 1 x 1 x 1 x 2 x 2 x 2 x 2 x 2 x 2 x	11 + 01FH (HCDM(NK+11-HCD)		0700
0010	44 PHHILI = PHI MK - LI			0710
0071	CALL LASINTIPZZILLE DEMILLEZINEPHBARLENLE	4 N L S	67	C720
00772	RF TUT W		07	0570
6353	905 FORMSTIGSH HARRISS SMALLER THAN O, 0625 OR BIGGER THAN 5.03	625 DR ELGGER THAN 5.01	07	6.0
+130	906 FIRMATIBAH HBAR BIGGER THAN 5.0, US	ED HBAR# 5.01	1.0	0750
. \$200	94		0440	

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JR FRAN. JV.	DRIMAN IN GLEVEL IN MOD Z LABOINE DAIE - 69352	DATE = 69342 15/42/51	PAGE DOCK
1000	SUPPOUTINE LAGINITALIGATORAXOLEGATOLAN	0010	
5000	0146NSION X(16) ,P(16) ,F(16) , X LCG(16) , FLOG(16)	0020	
6000	M-1-1030 M-1-1	0400	
4000	XIM) ~ ALIVI XLOS (M))	0020	
5000	F(M) x 3   05 (F LOS [M))	0900	
9000	1030 CONTENDE	00.20	
1007	X2-4126 (X0103)	0000	
0000	70 1010 M1=1, A	0600	
0009	I = CIF	0010	
- 0100	50 101 0 c	0110	
1100	16 (4-41 31 009 -101 2-1003	0150	
1012	1000 P( HL) = P( M) = ( XO-X(M) ) / (X(M) ) - X (M))	0130	
(-013	1910 FORTING	0140	
6014	F0*0.0	01.0	
2100	20 1020 HE #	01.50	
4107	1020 Filefitp[M] of [M]	CI 7C	
:017	1f (Fn-89,1160,120,101		
1000	LOI FORTH.		
6003	100 F1 = 2 11 32 0 0 F D		
0200	AE TUN	0610	
1260	G/3	0200	

- LIKIKAT JX-E	LALYTH AL DULL	DALE . 69342	12/25/51	בססס שליש
0001	SIGROUTINE LAGEX SEXP.FO.N.		00100	
0005	DIMENSION X(30), P(30), F(30)		0000	0
	DD 1610 M=1 .N		2400	0
4000	. P. M. I		00500	0
. 1	0.01 LOIO MI=1.N		0900	0
9000	IF(41-411009,1010,1009		001	0
7000	1009 P( M) = P( W) + ( KD- X( W) ) / (K ( M) - K ( M) ) )		0630	G
00.03	. 1010 CONTINUE		0600	0
00010	Filmon 0		212	0
0000	01 1020 M = 1 .N		0110	0
(,011;	1920 FO - F (1+P (M1) +F (M1)		0150	0
0012	AF TUN			
E 100	Gab			

FORTRAY_ LY.	FORTRAY IV. G. LEYEL 3.4 MILD 2	RATIO	DATE = 69342	15/42/41	PAGE 0001
0001	SINPOUTINE BAT	SUPPLY AND ALCOHOLING THE MENT OF THE PROPERTY OF THE PARTY OF THE PAR	20 A CO.		
0000	287A=. 54(EL/R)		THE WITH THE WITH H		
90.93	PLL # LLITZEL	The second section of the second section of the second section of the second section s			
00024	MINICITAL				
0105	ALHAL LAI				
6000	IFIRIL. LT. 0.11 PLL W. 1	RLL W. 1	· desired and the same of the		
	JE ("LL. 5 T. 0. 15) ALL = 0, 75	1911=9,75			
DI 38	1F (11H . LT. 0. 151HH . 0. 15	His .0. 15			
66.30	IF LIM. 6 T. 0. 751H1 .0. 75	H-1 .0. 75			
0000	IF (RLH. GT. h. 1214=5.	14=5.	are two terms and the standards are charged with specify formal management with the specific		
2011	15 ( 0 6 1 6 1 6 1 6 1 6 1 6 1 2 1	IF ( " LM. G T. 6. 1 2PZ A " 0. 5 \$ 16 . \$ H/ R)			
5.412	RF TUKN				
6,000	5.0				

PAGE 0001			en e			design a das a a de sign de de seu commune													
15/42/41		A10																	
DATE = 69342 15/42/41	SUBROUTINE GRIDIALALITANALI	ZONTAL LINES FOR G																	
GRID	TABALL	VERTICAL AND HOST																	
	OUTINE GRIDIALALI	DIMENSION XX (50)	2 = A 41 NJ (A 11 T , A - A L 1 T 1	SA VERLEES	(28 /h	nn 30 Jel #1	X*NJ*SPhDt	14-7 VC CV-1	SAVE = A MINITAXI JL # SAVE)	r( J) -0, 2120 ,20,31	13 5 ( SA VE - XX ( J) 1 -VE - XXX 21 13 0.3 0	30 COUTLAND	316	- IF I MA - NE . 20 50 ID 23		IF (4NS- XX(1)122,23,22	NLF	15 [ 114 , 126, 20] L=K	
4-14 G. LEVEL 14 300 2			Z = A = 2	SA AS	TEM Australia	E 00	T.A.X	L = X	AN AS	IF (X)	JE XXXEL	30 CONT	20 CONTI 4CE	DD 22	[+]	22 CONT	23 CONTINUE	AF THA	N-
- FINTER SE	- 000 - W	1000	610	5000	0000	0000	9012	6107	\$100	0016	6100	0019	1200	6023	-00024	0029	1200	00020	The Unit

CARO		FORM	FORMAT (IS)	KEF 10.8	(8)		PASE
- Str							
,	56.35	21000	0.405	0.03	0.49	0.02	
4 4	0.55	1.0	0.730	0.0	0.03	0.40	
9	1.37	1.30	1.4.	1.6	1.49	2.0	
2	0,435	0.012	0,50	0.03	0.42	20,0	
c	1.33		1.48		1.65	1.0	
01	1.77	1.36	1.86	1.6	1.90	2.0	
12	000	210.0	1.2	50.0		10.00	
13	1.7	0.0	er.	7.0	2,1	1.0	
et b	2.45	1.30	2.26	1.6	5.00	2.0	
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17	2.04	ı,		7.0	2.0	1.0	
**	2.16	1.30	2.05	1.6	3.1	2.0	
70	46		14.		- 1111	0.00	
21	7. 13		7.67		30.5	1.0	
2.5	3.24	1.30	3.50	1.0	3.7	2.0	
73	0, 0	0.012	1.0.	0.03	104	0.01	
25			3.95	7.0	4.1	2.0	
26	4.3	1.10	4.6	1.6	4.3	2.0	
27	1.1	0.012	1.25	0.03	1.65	0.07	
62	100		4.13		5.43	1.0	
30	1.01	01.1	8	1.6	6.0	2.0	
32	2. (10	0.1	3.45	0.5	4.6	0.40	
10	2.0	0.4	4.7	0.7	4.4	1.0	
36	7.0	1.10	7.5	0.10	200	2.0	•
36	2.98	0.1	4.0	0.2	5.3	0,00	
37	2. 25	5	5.74	0.1	7.8	0.1	
58	\$ 6	1.30		9.0	e .	0.0	
4.0	4.4	1000	0.00	0.0	7.7	0-40	
1+	N. N.	0	3.0	0.1	10.7	0.1	
4.3	11.1	1.30	11.0	1.6	13.4	2.0	
**	7.1	0.1	9.3	0.5	12:1	0,40	
45	10.4	0.5	12.1	0.7	13.6	1.0	
4.5	15.0	1.30	10.0	1.6 11	3.0	2.0	
4.8	2,45	0.1	10.7	0.5	12.4	0.40	
4.0	14.2	\$ . 3	14.45	0.1	16.0	1.0	
05	(7.23	1.10	14.5	1.6	20.1	2.0	
55		2.2	.51	2.1	10.	7.1	
15	*0*	2.2	0.	2.45	15.	2.48	
54	30,	60.5	•00	2.48	.04	3.1	
- 55.	()	4.16	15.	2.3	30	7.12	
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10	40.	6.0	0.0	7.24	15.	7.0	
25	30.	6.7	40.	95.9	0	7.6	
19	15.	7.3	30.	7.0	40.	6.96	
6.4	0.	0.3	15.	7.7	30.	7.45	
2.0	*0*	7.24	.0.	8.4	15.	9.1	
9	30.	7.95	*0*	3.65	0	8.74	
57	15.	F. 46	30.	8.14	40.	9.0	
5.8	0	9.0	15.	2.7	30.	A.43	
69	40.	A-25	0.0	0.0	15.	6.0	
70	30.	11.03	40.	H.76	0.	10.3	
-	15,	10.0	30.	4,75	*0%	9.56	
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)	*0.5	10.25	0	11,37	15,	11.68	
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7		\$ 900.	0.177	5580.	0.252	4640.	
8		3240.	0.505	2340.	0.757	1320.	
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used to calculate data points for the construction of impulse charts in					
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